

Application No.: 10/692,584
Response Dated: December 21, 2006
Reply to Office Action Dated: August 21, 2006

LISTING OF THE CLAIMS

Claims 1 to 10, cancelled.

11. (currently amended) A process for controlling the strain hardening properties of a polymer comprising:

blending a polymer and nanoparticles to produce a polymeric composition;
quenching the polymeric composition to yield an amorphous polymeric composition;

forming a film from the amorphous polymeric composition; and
subjecting the film ~~composition~~ to strain hardening at a temperature sufficient to generate a rubbery state in the film from about 75°C to about 115°C,

wherein the nanoparticles are present in an effective amount of between 0.01% and 10% by volume based upon the volume of polymer used to form the polymeric composition in order to reduce the true strain at which the film formed from the polymeric composition undergoes strain hardening.

12. (previously presented) The process of claim 11 wherein the polymer is selected from one or more homopolymers and copolymers of polyolefins, polyamides, polyimides, polyesters, aliphatic polymers, amorphous polymers, crystallizing polymers, and blends, alloys and combinations of two or more thereof.

13. (previously presented) The process of claim 11 wherein the nanoparticles are particles with at least one dimension in the nanoscale selected from spheres, particles of irregular geometry, sheets, foils, fibers, wires, tubes or combinations of two or more thereof.

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14. (previously presented) The process of claim 11 wherein the nanoparticles are selected from carbon nanoparticles, graphite nanoparticles, carbon nanotubes, graphite nanotubes, spherical nanoparticles, Buckyballs, glassy nanoparticles, silica-based nanoparticles, nanoclays, substituted Montmorillonite, metal oxide nanoparticles, metal sulfide nanoparticles, metal nitride nanoparticles, metal complex nanoparticles, metal nanoparticles, metallic alloy nanoparticles, metallic alloy nanowires, metallic alloy nanospheres, metallic alloy nano-sized sheets, metallic alloy foils, colloidal nanoparticles, and mixtures of two or more thereof.

15. (previously presented) The process of claim 11 wherein the nanoparticles are substituted Montmorillonite.

16. (previously presented) The process of claim 11 wherein the nanoparticles are present in an amount of between 0.1% and 10% by volume based upon the volume of polymer used to form the polymeric composition.

17. (previously presented) The process of claim 11 wherein the nanoparticles are present in an amount of between 1% and 10% by volume based upon the volume of polymer used to form the polymeric composition.

18. (previously presented) The process of claim 11 wherein the nanoparticles are present in an amount of less than 5% by volume based upon the volume of polymer used to form the polymeric composition.

19. (previously presented) The process of claim 11 wherein the polymer composition is partially or completely molten when subjected to strain hardening.

20. (previously presented) A strain hardened polymeric product produced from the polymeric composition of claim 11.